WHAT IS CLAIMED IS:

1. A tunable laser, comprising:

a first tunable element having a corresponding first error signal;

a second tunable element having a corresponding second error signal; and

a controller to linearly relate said first error signal and said second error signal to output a first control signal to control said first tunable element and a second control signal to control said second tunable element.

2. The tunable laser as recited in claim 1 wherein said first tunable element comprises at least one temperature tunable filter and said second tunable element comprises temperature controllable cavity length.

3. The tunable laser as recited in claim 2 wherein said controller comprises:

an input matrix representation of said first and second error signals;

an output matrix representation of said first and said second control signals; and

a coupler matrix to linearly relate said input matrix to said output matrix.

4. The tunable laser as recited in claim 3 wherein said coupler matrix comprises:

an identity matrix.

5. The tunable laser as recited in claim 3 wherein said coupler matrix comprises a plurality of gain coefficients.

6. The tunable laser as recited in claim 1 wherein said first tunable element comprises a first temperature tunable filter and said second tunable element comprises a second temperature tunable filter.

7. A method for controlling a tunable laser, comprising:

representing a plurality of error signals from tunable elements as an input matrix to a controller;

representing a plurality of output signals to control said tunable elements as an output matrix;

using a coupler matrix to linearly relate said plurality of error signals in said input matrix to said output signals in said output matrix.

8. The method according to claim 7 wherein said plurality of error signals comprise at least first and second filter error signals from corresponding first and second temperature tunable filters, and a cavity length error signal.

9. The method according to claim 8 further comprising:

placing at least one gain coefficient in said coupler matrix.

10. The method according to claim 8 further comprising:

placing a plurality of additive inverse coefficients in said coupler matrix to compensate for a difference between first and second filter error signals.

11. The method according to claim 10, further comprising:

using said coupler matrix to lock temperatures of said first and second temperature tunable filters to a sled temperature for controlling cavity length.

12. The method according to claim 10, further comprising:

placing a plurality of gain coefficients in said coupler matrix for weighting said error signals in said input matrix with respect to one another.

13. The method according to claim 12 wherein said plurality of gain coefficients comprise calibration conversions.

14. The method according to claim 8 further comprising:

in a temperature mode, setting said first and second temperature tunable filters and a sled temperature for controlling cavity length to initial temperatures for a given laser frequency; and

in a cavity mode, performing said using a coupler matrix to linearly relate said plurality of error signals in said input matrix to said output signals in said output matrix.

15. The method according to claim 14, further comprising:

retrieving said initial temperatures from a look-up table.

16. An external cavity tunable laser system, comprising:

a first temperature tunable filter having a corresponding first filter error signal;

a second temperature tunable filter having a corresponding second filter error signal;

a temperature controllable sled for tuning cavity length having a corresponding cavity length error signal;

a controller comprising:

an input matrix representation of said first filter error signal, said second filter error signal, and said cavity length error signal;

an output matrix representation of control signals for said first temperature tunable filter, said second temperature tunable filter, and said temperature controllable sled; and

a coupler matrix to linearly relate said plurality of error signals in said input matrix to said output signals in said output matrix.

17. A system as recited in claim 16 further comprising:

a table to store initial temperatures for a given laser frequency.

18. The system as recited in claim 16 wherein said coupler matrix comprises:

an identity matrix.

19. The system as recited in claim 16 wherein said coupler matrix comprises:

a plurality of gain coefficients.

20. The system as recited in claim 19 wherein said coupler matrix comprises:

a plurality of additive inverse coefficients to compensate for a difference between first and second filter error signals.